MaineDOT Culvert Hydrology Summary Sheet

Town: Bucksport **WIN (or Region):** 18812.00

Route: 46 **Local Road Name:**

Stream: 0

Lat: 44.5769 **Long:** -68.7538

Asset ID: 264890 **Also Known As:** 0

Existing Structure:

****

Watershed Area: 0.6 ***sq. mi.*** **NWI Wetlands:** 1.5 ***%***

Wbf - calculated: 8.5 ***feet*** **Wbf - measured (if known):** ***feet***

Q50: 126.7 ***cfs***
Q100: 148.1 ***cfs***

Preliminary **Pipe Size*:**

* Note: this size may NOT meet fish passage regulatory requirements. Consult with ENV staff for guidance.

Comments:

By: DFB
Date: 10/10/2017
Revised:

ver: *12/7/2016*

WIN:	18812.00	**Project Name:**	Bucksport 18812
Town:	Bucksport	**Stream Name:**	
Route No.	46	**Bridge Name:**	
Asset ID:	264890	**Analysis by:**	DFB
Lat:	44.5769 **Long:** -68.75381	**Date:**	10/10/2017

Peak Flow Calculations by USGS Regression Equations (Hodgkins, 1999 & Lombard/Hodgkins, 2015)

Enter data in blue cells only!

	km^2	mi^2	ac	***Enter data in [mi^2]***
A	1.55	0.60	384.0	Watershed Area *DRNAREA*
W	0.02	0.0	5.6	Wetlands area (by NWI)
P_c	518901	4936828		watershed centroid (E, N; UTM 19N; meters)
County	Hancock			*choose county from drop-down menu*
pptA	45.2			mean annual precipitation (inches; by look-up)
SG	0.00			sand & gravel aquifer as decimal fraction of watershed A

A (km^2)	1.55	**Conf Lvl**	0.67
W (%)	1.47		NWI Wetlands % *STORNWI*

Ret Pd	**Peak Flow Estimate**			
T (yr)	**Lower**	**Q_T (m^3/s)**	**Upper**	**Q_T (ft^3/s)**
1.1		0.54		19.2
2		1.15		40.5
5		1.82		64.3
10		2.33		82.1
25		3.03		107.1
50		3.59		126.7
100		4.19		148.1
500		5.72		202.0

Worksheet prepared by:
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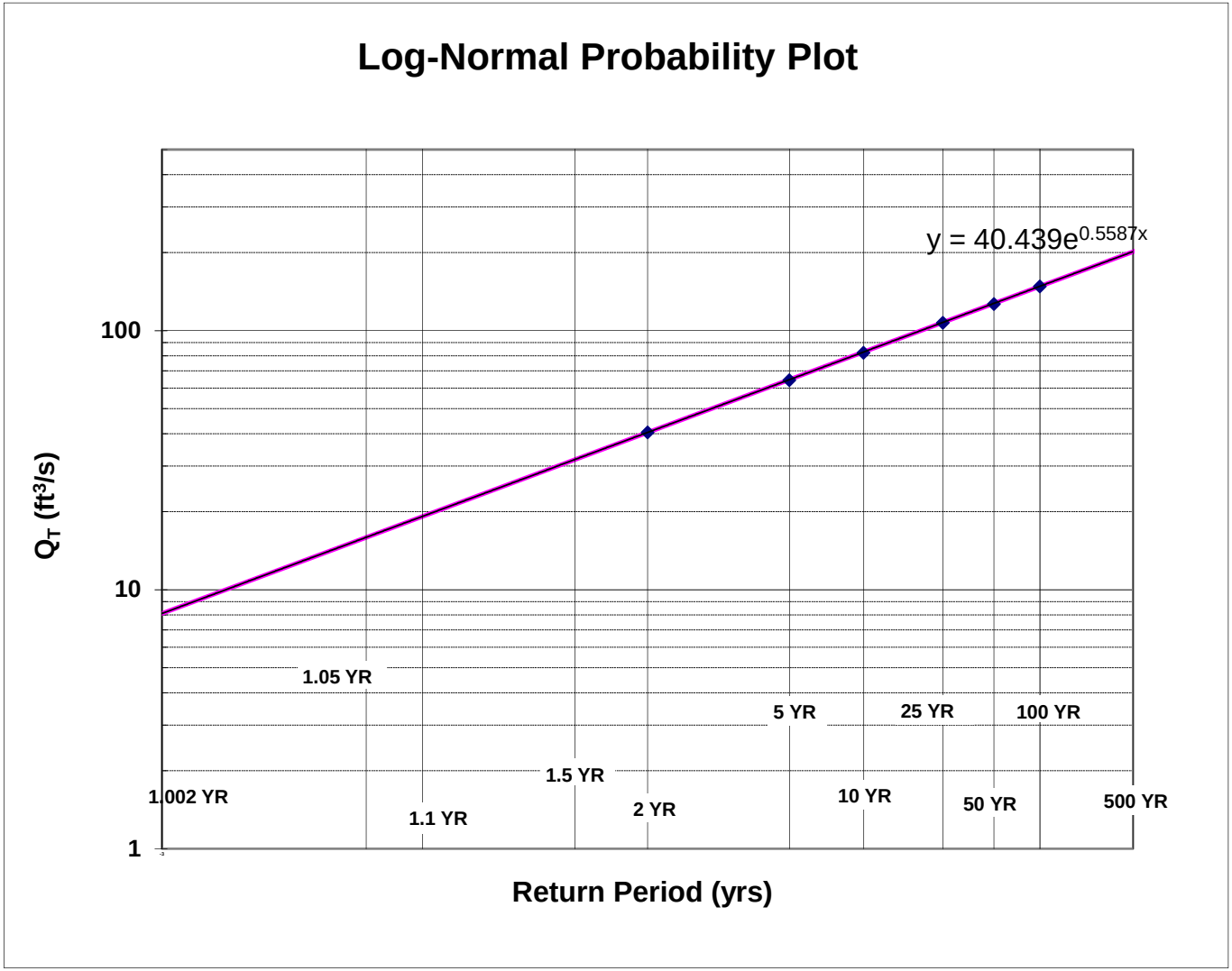
ver. 2017 Jun. 09

References:

Hodgkins, G.A., 1999.
Estimating the magnitude of peak flows for streams in Maine for selected recurrence intervals
WRIR 99-4008, USGS Augusta, ME

Lombard, P.J. & G.A. Hodgkins, 2015.
Peak flow regression equations for small, ungaged streams in Maine - Comparing map-based to field-based variables
SIR 2015-4059, USGS, Augusta, ME

$Q_T = b \times A^a \times 10^{-wW}$


Log-Normal Probability Plot
y = 40.439e0.5587x
100
10
1
QT (ft3/s)
1.05 YR
5 YR
25 YR
100 YR
1.5 YR
1.002 YR
10 YR
1.1 YR
2 YR
50 YR
500 YR
Return Period (yrs)

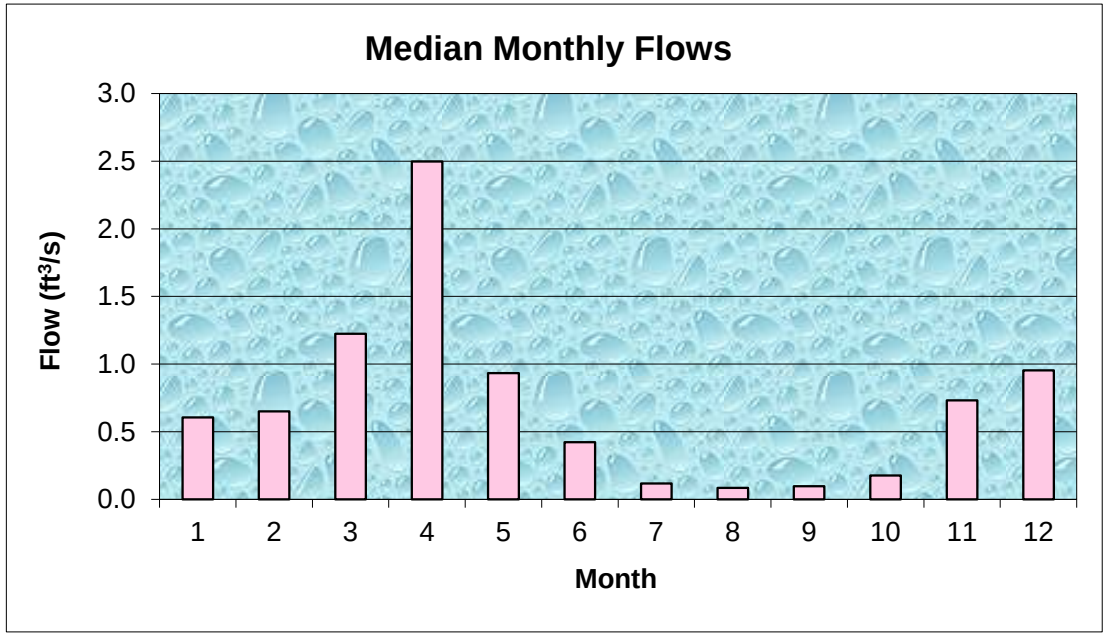
WIN:	18812.00	**Project Name:**	Bucksport 18812
Town:	Bucksport	**Stream Name:**	0
Route No.	46	**Bridge Name:**	0
Asset ID:	264890	**Analysis by:**	DFB
Lat:	44.57690 **Long:** -68.75381	**Date:**	10/10/2017

DO NOT ENTER ANY DATA ON THIS PAGE; EVERYTHING IS CALCULATED

MAINE MONTHLY MEDIAN FLOWS and HYDRAULIC GEOMETRY BY USGS REGRESSION EQUATIONS (2004, 2013)

	Value	Variable	Explanation
	0.60	*A*	Area (mi^2)
518901.5	4936828	P_c	Watershed centroid (E,N; UTM; Zone 19; meters)
	51.50	*DIST*	Distance from Coastal reference line (mi)
	45.2	*pptA*	Mean Annual Precipitation (inches)
	0.00	*SG*	Sand & Gravel Aquifer (decimal fraction of watershed area)

Month	Q_{median} (ft3/s)	(m^3/s)
Jan	**0.61**	0.0172
Feb	**0.65**	0.0184
Mar	**1.22**	0.0347
Apr	**2.50**	0.0708
May	**0.93**	0.0265
Jun	**0.42**	0.0120
Jul	**0.12**	0.0033
Aug	**0.09**	0.0024
Sep	**0.10**	0.0027
Oct	**0.18**	0.0050
Nov	**0.73**	0.0207
Dec	**0.95**	0.0270



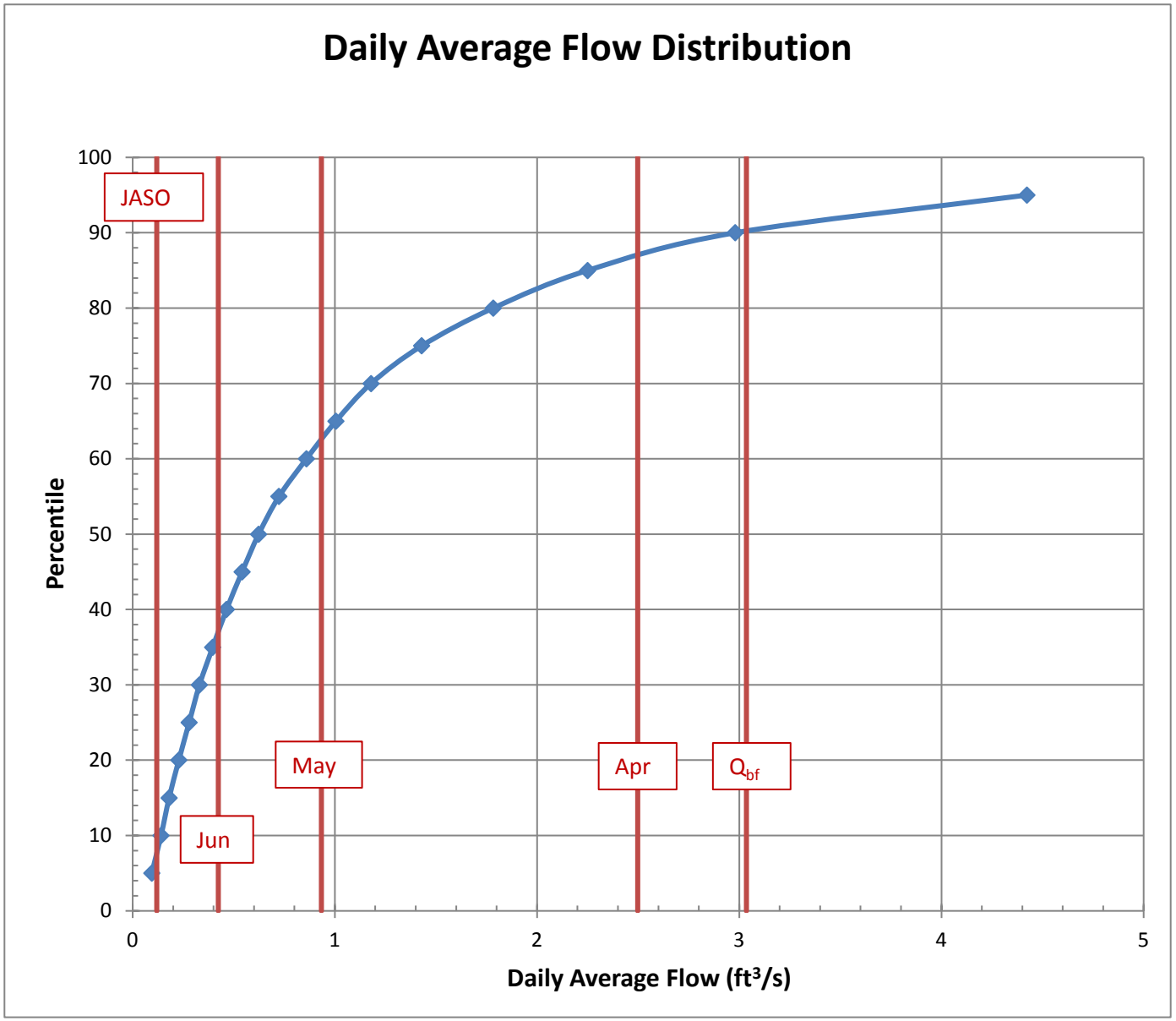
Q_{bf}	**3.0**	
ann avg	**1.3**	
ann med	**0.6**	
$Q_{1.002}$	**8.1**	
$Q_{1.01}$	**11.0**	
$Q_{1.05}$	**15.9**	
Q_{bf}	**17.0**	assume v = 4ft/s

W_{bf}	**8.5**	estimated bankfull width (ft)
d_{bf}	**0.5**	estimated bankfull depth (ft)
A_{bf}	**2.9**	estimated bankfull flow area (ft^2)

References

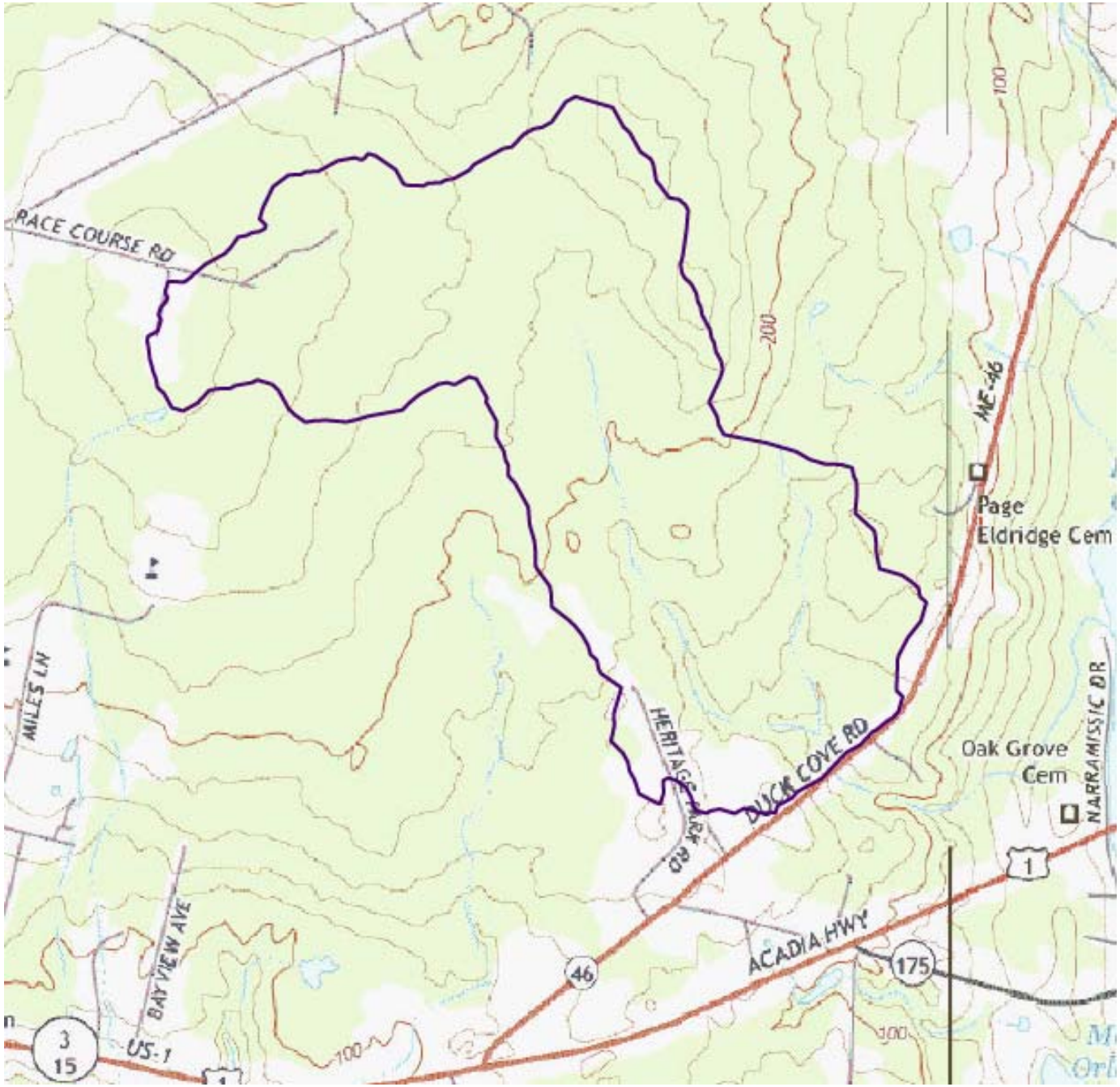
Dudley, R.W., 2013. FY2013 Progress Report - Phase 1 …, USFWS QRP Project

Dudley, R.W., 2004. Estimating Monthly Streamflows … , SIR 2004-5026



Daily Avg Flow Dist		
A_{ws} = (mi^2)		0.6
Q (ft^3/s)		
Pctl	**Median**	**84th pctl**
5	0.09	0.15
10	0.14	0.21
15	0.18	0.26
20	0.23	0.32
25	0.28	0.37
30	0.33	0.43
35	0.40	0.49
40	0.46	0.56
45	0.54	0.63
50	0.62	0.75
55	0.72	0.87
60	0.86	1.02
65	1.01	1.19
70	1.18	1.39
75	1.43	1.67
80	1.78	1.99
85	2.25	2.56
90	2.98	3.43
95	4.42	5.34

Q_{bf}	3.0
$Q_{1.002}$	8.1
$Q_{1.1}$	19.2
Q_2	40.5


RACE COURSE RD
MILES LN
BAY VIEW AVE
US-1
3
15
HERITAGE HILL RD
DUCK COVE RD
ME-46
Page
Eldridge Cem
Oak Grove
Cem
NARRAMISSIC DR
1
ACADIA HWY
46
175
100
200